

Long Out-time, Out-of-Autoclave Cure Composites, Phase I

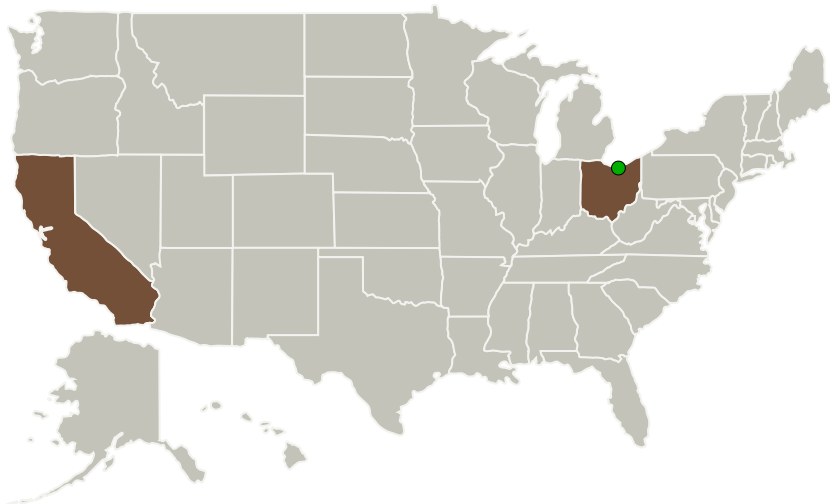
Completed Technology Project (2010 - 2010)



Project Introduction

As the size of composite parts exceed that of even the largest autoclaves, new out-of-autoclave processes and materials are necessary to achieve the same level of performance as autoclave cured composites. Unfortunately, the quality of composites manufactured with current out-of-autoclave prepreg systems is limited by their short shelf-life at ambient conditions. The resin advancement, due to long lay-up times, commonly causes variations in fiber volume and higher void content in the cured structures. Also, current out-of-autoclave prepreg systems do not provide the same level of performance, especially damage tolerance, as many current autoclave cured prepreg systems. It is the objective of this work to develop a matrix and prepreg system for out-of-autoclave processing that has a year out-time at ambient conditions while also providing an excellent balance of mechanical properties and damage tolerance. As an additional functionality, the out-of-autoclave prepreg system will be developed to have inherent skin-core self-adhesive properties so that film adhesives are not required for designs with honeycomb cores. It is expected that the TRL will be 4 at the end of this Phase I program.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Applied Poleramic, Inc.	Lead Organization	Industry	Benicia, California
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Project Transitions

**January 2010:** Project Start**July 2010:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140103>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Applied Poleramic, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

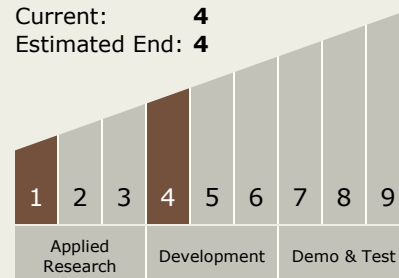
Carlos Torrez

Principal Investigator:

Brian S Hayes

Technology Maturity (TRL)

Start: **1**
 Current: **4**
 Estimated End: **4**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.4 Manufacturing
 - └ TX12.4.1 Manufacturing Processes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System